



Silver Moss

INTRODUCTION



Silver moss (*Bryum argenteum*) is unfortunately a common regional problem on golf greens. Silver moss tends to be an insidious problem, in that one year there may only be a few colonies of moss present, whilst the next year you have a major problem.

Given the very dense nature of silver moss, it is very difficult for chemicals to penetrate into and hence kill the moss. Consequently control programmes often produce variable results.

LIFE CYCLE

Silver moss goes through two distinct phases. The juvenile phase primarily occurs during summer – early autumn and practically is difficult to distinguish from algal slime. However, although this phase is most commonly a black-green colour it may also take on a brownish look.

The important point from a Course Superintendents perspective is that this juvenile phase is much easier to control than the mature cushions of silver moss.



The juvenile phase of Silver moss is most evident during summer – early autumn and practically is often very difficult to distinguish from Algal slime.



During autumn (March onwards) and normally once the first dews are observed, the mature Silver moss cushions start to form. These initially start as single filaments of silver moss growing out of the “slime” and once the autumn rains occur, rapidly give rise to cushions of silver moss.

FACTORS FAVOURING SILVER MOSS

Many reasons have been put forward as to what causes silver moss. From a practical perspective some of these causes do not always “stack up”. However, the main conditions that do contribute to silver moss are as follows:

1. Cover

Mosses are colonising plants and therefore are usually (one of) the first plants to establish in any weak or bare areas that are present.

2. Mowing height

The expectations of golfers are such that low mowing heights (generally below 3.5mm) are required on greens throughout the year. Despite what appears to be a complete turf cover this provides an opportunity for light to reach the soil surface and hence for moss to establish.

3. Thatch

This provides a moisture retentive surface which is essential for moss to establish and persist.

4. Nitrogen fertility

Low nitrogen has often been cited as a cause of moss. Although moss is worse under low nitrogen regimes (<150kg actual N/ha/yr) the reality is that it occurs under both low and high nitrogen regimes.

Probably of more importance is the nitrogen source and the timing of this. Silver moss is generally worse where organic, nitrate or controlled release nitrogen sources are used and particularly where these are used during the late summer – autumn as the moss establishes. Conversely, acidic sources such as ammonium sulphate are damaging to the juvenile moss phase and can as a consequence reduce the severity of moss.

CONTROLLING MOSS

Healthy turf cover

The first priority is to maintain a complete and healthy turf cover. Commonly occurring issues that contribute to a weak turf cover and encourage silver moss include:

Triplex ring

The key issue is to match your mowing frequency to the growth rate of the turf within the “triplex ring” and particularly during the stress periods (summer and winter), reduce the mowing frequency of this area.

Dry patch

Although moss is typically associated with “wet areas” silver moss more often than not, establishes on dry ridges or areas affected by Dry patch.

Irrigation coverage

As discussed under Dry patch, Silver moss often establishes in areas where growth is poor due to moisture stress. Hand watering maybe required to “top up” any dry areas where irrigation coverage is less than ideal.

Chemical control

Juvenile moss (slime stage)

For those clubs that either have a history of silver moss or have a weak cover going into autumn and prior to the cushions of moss forming consider the following strategies:

Using acidic fertilisers such as Ammonium sulphate, Iron sulphate during the late summer – autumn.

Heavy rates of contact fungicides (Thiram, Orthocide, Mancozeb/Maneb) applied during late January – early March. *For example: Thiram 80W or Mancozeb @ 300g/100m²*

Caution: To reduce the risk of burning the turf, the powder/granule formulations are preferred.

Copper oxychloride or Copper hydroxide formulations are an option.

Caution: High rates or over use of copper based products can be damaging to the turf.

Adult moss (cushion stage)

For best results when controlling moss:

1. In order that the product translocates to the base of the moss cushion, the moss must be thoroughly saturated (ie when lightly touched water should ooze from the moss).
2. Consider verti cutting or grooming the turf prior to spraying (ie aid penetration of the herbicide)

3. Use appropriate water rates. Most products specify 1000L/ha.
4. The moss needs to remain moist for 2 – 3 days following spraying, in order to prolong the herbicide effect. If necessary consider syringing the greens around 12.00 noon, 3.00pm and 5.00pm.
5. Implement a turf recovery plan (fertiliser, sowing etc) to reinstate a complete turf cover.

Chemical options include:

1. Iron sulphate (typically used at 300-500g/100m²)
 - Results are generally more variable than when using chemicals.
 - Repeat applications (approximately 4-6 weekly) will be required when moss starts to “greens up”.
 - Care is required when using high rates of iron sulphate during winter as the “dead leaf” can contribute to a “surface gel” which limits drainage and favours slime.
2. Quaternary Ammonium Chlorides (Yield, Surrender, Quaternary ammonium chloride etc)
 - Given the proliferation of brand names, make sure the application rate reflects the amount of active ingredient present within the product.
 - As these products can cause a short term growth check or thinning of the turf when used on browntop greens, they must be actively growing.
3. Dichlorophen (Mostox)
4. Copper oxychloride or Copper hydroxide
 - High rates or over-use of copper based products can be damaging to turf.
 - Frequent applications (2 – 3) at approximately 4 – 6 weekly intervals will generally be required.
5. Detergents
 - Detergents are frequently used overseas for controlling moss. There has been some limited use of these products as a spot treatment in New Zealand.
 - Care is required as detergents can burn or kill the turf.

